

## **Using social learning theories to explore the role of generative artificial intelligence (AI) in collaborative learning**

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### ***Abstract***

This opinion piece highlights the integral role of generative artificial intelligence (AI) in learning within Higher Education Institutions (HEIs). Employing social learning theories, this opinion piece aims to explore generative AI as a stakeholder in learning. By weaving in social constructivist and learning theories, this opinion paper aims to uncover the capacity of generative AI to facilitate and enhance the learning process. Central to this opinion piece proposition is cultivating a learning community that leverages AI's potential as a new learning stakeholder. This opinion piece aims to contribute to ongoing discussions in the field of learning development by offering a fresh outlook on how AI can be an asset in knowledge co-creation and collaborative learning. The paper does this in the following ways: (1) highlights how generative AI can effectively contribute to learning and knowledge co-creation, and (2) provides some guidance for integrating generative AI in collaborative learning.

**Keywords:** artificial intelligence; higher education; collaborative learning; social constructivism; social learning theories.

### ***Introduction***

The existing literature on generative artificial intelligence (AI) in learning is limited, however, Higher Education Institutions (HEIs) are actively working to determine their AI-related plans with many staff members experimenting with various approaches to incorporate AI into

learning and teaching. While some studies have explored the effectiveness of AI in education, more research is still needed to provide compelling evidence on the role of generative AI in how students learn (Celik et al., 2022; O'Dea and O'Dea, 2023; Perera and Lankathilaka, 2023; Rasul et al., 2023). This opinion piece presents a fresh perspective on generative AI as a stakeholder in learning and builds on the work of Rasul et al. (2023), who explored the educational significance of ChatGPT and its effective facilitation of constructivist learning. The opinion piece draws on social constructivism and learning development theories of i) academic literacies and ii) the concept of belonging.

### ***Advances in modern AI in Education***

Advances in generative AI in modern education have brought about many possibilities for students to leverage them in diverse ways for learning (Celik et al., 2022; Perera and Lankathilaka, 2023; Rasul et al., 2023). Generative AI, with its different functionalities, can be used by students to enhance academic writing, transcribe lectures, paraphrase texts, and even serve as a study buddy (Celik et al., 2022; Burger et al., 2023; Kasneci et al., 2023). With its adaptability and personalised content delivery, the autonomy bestowed by generative AI enables learners to tailor and customise its use to align with individual students' needs, pace of learning, learning styles, and strengths (Rasul et al., 2023).

Educators are also embracing the potential of generative AI to enhance their teaching practices and save time and effort, allowing them to focus on other aspects of their teaching practice. For example, educators are using generative AI to generate session topics, inspire teaching materials, design assessments, and even create a draft syllabus (Gonsalves, 2023; Kasneci et al., 2023; Perera and Lankathilaka, 2023).

Yet, amid this transformative shift, a prominent discussion within HEIs revolves around the impact of generative AI on the learning process and assessment (Perera and Lankathilaka, 2023; Sweeney, 2023). Notable among these concerns include concerns around academic integrity, particularly plagiarism, and the ethical considerations associated with using AI in the learning process (O'Dea and O'Dea, 2023; Rasul et al., 2023). Concurrently, there have been

calls for banning the use of ChatGPT by some HEIs because of its impact on learning (Perera and Lankathilaka, 2023). The discourse around generative AI has also led to some educational institutions proactively formulating policies and guidelines for using generative AI in learning and assessments, with some institutions integrating AI detection tools into platforms, such as Turnitin, to detect instances of academic misconduct. However, there is limited empirical evidence to support the effectiveness and efficiency of AI detectors, with authors such as Liang et al. (2023) raising concerns and research gaps about the fairness and robustness of the AI detector tools, especially against non-native English writers.

### ***Social Constructivism and learning development theories in the development of knowledge***

Constructivism suggests that learning is an active process in which learners construct their understanding of the world based on their experiences and interactions with the environment (Mascolo et al., 1998; Adams, 2006; Rasul et al., 2023). Social constructivism emphasises the role of social and cultural factors in shaping how individuals actively construct knowledge within an educational setting (Adams, 2006; Walker and Shore, 2015; Saleem et al., 2021; Rasul et al., 2023). This theory suggests that learners are not mere receivers of knowledge from their instructors but rather actively construct their understanding through interactions and experiences, interpreting it based on their prior beliefs and knowledge (Adams, 2006; Walker and Shore, 2015; Saleem et al., 2021). However, social constructivism has its own limitations. For example, its inclination towards autonomous knowledge construction may not adequately accommodate diverse learners or cater for the level of autonomy required for effective learning (Adams, 2006; Saleem et al., 2021). The absence of expert support within this social constructivist framework could potentially lead to groupthink and knowledge gaps due to learners being limited by their own perspectives and experiences. Further, it is worth noting the 'social' aspect in social constructivism, which influences the process of actively constructing knowledge (Walker and Shore, 2015), may inadvertently lead to the exclusion of some learners who may struggle with differences in language, culture, and learning style. In such cases, generative AI, such as ChatGPT, can help students to overcome language barriers through its ability to help with writing, paraphrasing and idea development and its

language editing and translation feature (Kasneci et al., 2023; Perera and Lankathilaka, 2023). This enables students to focus on their ideas and communicate effectively, regardless of linguistic or cultural differences.

The academic literacies model focuses on the complex processes involved in acquiring appropriate and effective use of literacy, encompassing both epistemological and social aspects (Lea and Street, 2006). Literacy practices in academic disciplines are social practices associated with different communities (Lea and Street, 2006). Although social practices associated with academic literacies can extend beyond discipline and genres, they have limitations, such as challenges for students to access information and learning practices beyond their disciplines. Therefore, there is still the need to engage with diverse sources of information, which can be challenging for students to access. Although AI cannot replace the social processes involved in academic literacies, it has the potential to supplement and improve the learning experience with the massive dataset of text it has from the internet (Perera and Lankathilaka, 2023).

The sense of belonging refers to students' feelings of being accepted, included by, and connected to their institutions (Ahn and Davis 2020). Belonging encompasses social and psychological functioning, including academic engagement through curricula and activities such as interactions between students and academic staff and learning and teaching experiences (Ahn and Davis 2020). From a learning development perspective, generative AI can enhance engagement through activities that encourage active participation and inclusion. Whilst exclusion can hinder a sense of belonging and engagement, embracing the potential of AI and how students use AI, and collaborating with peers, staff and institutions, can allow them to embrace the potential of generative AI in learning.

When contrasting the impact of generative AI use against social constructivist theory and learning development theories, it is important to note that though generative AI cannot replace the benefits of learning that happen through socialisation, it can facilitate constructivist learning, for example, using generative AI as a study buddy, getting personalised feedback, using it to inspire ideas and provide on-demand access to educational resources and support, which are all crucial in students constructing their understanding of knowledge (Rasul et al.,

2023). Further, social constructivism or learning theories do not guarantee that students are constructing knowledge, especially with students who do not have prior experience or access to information. Even when students collaborate for knowledge co-creation, barriers, such as access to diverse information and adapting and personalising that information for knowledge construction exist. However, generative AI, such as ChatGPT, offers students an additional source to use in constructing knowledge.

### ***Suggestions on how generative AI can be used to enhance constructivist learning***

Generative AI holds significant potential in advancing social constructivist learning by harmonising with pedagogical strategies that prioritise student-centered knowledge construction. Below is some suggested ways generative AI can contribute to constructivist and collaborative learning.

#### **Incorporating generative AI in basic-level learning activities**

One potential use of generative AI is in designing lower-level learning activities for students to obtain basic information to help build a foundation for more advanced learning. This approach links to Bloom's taxonomy, in which he proposed that for students to reach the more advanced level of cognitive processes, such as 'synthesis' and 'evaluation', they must first master the foundational cognitive processes grouped under 'knowledge' and 'comprehension', where learning starts from simple tasks and is taken to a higher abstract level (Parker and Jaeger, 2016; Amin and Mirza, 2020). Hence, depending on the subject and the intention of learning, activities can be designed around the use of generative AI for students to do basic research and familiarise themselves with the basic use of generative AI. An example where educators have used this is in speed reading, especially where students have not prepared or done the reading for class discussions. There are several AI-powered tools that can summarise readings, such as ChatGPT, Monica and QuillBot.

**Practice:** Speed reading to catch up on reading. Educators ask students to put the paper on ChatGPT, individually read and get the main points of the reading

and summarise the readings with key points. The exercise is followed by group discussions or and in some cases, if a task is designed with the reading, for students to brainstorm on the given problem. This acts as a starting point for students to understand basic concepts before delving into the topic.

### **Provide a versatile learning experience that caters to different learning preferences**

Educators develop and use pedagogical strategies and approaches that place students at the center of knowledge construction. Active learning, for example, encourages students to actively engage with course content through problem-solving, informal group discussions, simulations, case studies, and role-playing (Meyers and Jones, 1993; Dewing, 2010). Active learning has limitations, particularly concerning challenges with the different learning needs of students and providing timely feedback to many students due to limited resources. For example, students who may struggle with language barriers but are auditory learners, may use generative AI tools, like HeyGen, to convert the language in audio into a familiar language. Automated transcription in MS Teams and apps, such as otter, enable students to capture and record lectures, facilitating personalised revision and self-paced learning. Students who learn through examples could use ChatGPT for examples and cases to enhance their understanding. The personalised nature of generative AI (Kasneji et al., 2023) and its adaptiveness in tailoring learning experiences to the unique needs of students (Rasul et al., 2023) could be made a part of collaborative learning, where students learn at their own pace and in their own style and come together to exchange ideas and perspectives.

**Practice:** Flipped learning exercise where students are given activities to prepare ahead of class using generative AI. In class, students are asked to work in groups using mind map tools, such as Whiteboard, Miro, MindMeister and Coggle to put ideas on a mind map, with options to add texts, links, icons, images, or videos to mind maps and analyse information generated by AI.

## **Generative AI as a stakeholder in learning**

In developing students' learning experiences, generative AI can assume a pivotal role as a stakeholder, embodying the essence of a critical friend, offering constructive insights, feedback, and guidance to students, a constant companion available 24/7, and a study buddy. As a stakeholder in learning, educators can use generative AI to co-create learning materials, prompts, or scenarios that ignite discussions and collaboration among learners. For example, AI-generated case studies or problem statements can be designed so that students can access tailored information, resources, and learning materials in their own time before class sessions or assessments.

**Practice:** Assign students a group project, with each student given a number of words to contribute to the group. The idea is for students to work with ChatGPT as a team member. Students are given a period to work on the project, critiquing the information from ChatGPT, doing further research to find out if information from chat is accurate and reflecting on the learning process.

## **Integrate generative AI to enhance collaboration and inclusivity**

Collaborative learning is a crucial component of student learning and developing valuable experience in skills such as communication, problem-solving, and leadership, which are essential employability skills (O'Dwyer, 2023). Incorporating generative AI in learning activities can improve student-teacher interaction and create a sense of belonging, enhancing students' learning experience (Ahn and Davis, 2020; Perera and Lankathilaka, 2023). Collaborative activities incorporating the use of generative AI can be designed within core curriculum or extracurricular initiatives with students with some student-led.

**Practice:** Students are given a task or problem, which they must first research and try to tackle individually. The individual element of the tasks is to allow students to use generative AI to develop or harness their ideas. Students choose group members working on the same theme or are assigned group members working on the same theme. In their groups, students continue to work together until the task is completed.

In improving student-staff relations, generative AI could be used in research collaborations with students and gamification exercises building students' sense of belonging and engagement.

It is important to note that we do not argue that generative AI is to replace traditional teaching but rather the 24/7 access to information for learning tailored to students' individual needs could aid students' construction of knowledge. It is important to note that when incorporating generative AI into learning activities, educators should consider the subject and discipline being taught as well as the learning styles of their students. However, focusing solely on a student's learning style may not be enough to ensure effective learning, and educators should also consider other factors, such as their own knowledge in using generative AI for designing learning tasks, and students' knowledge of ethically using generative AI. Additionally, it is important to recognise that generative AI should be used as a tool to enhance individual cognitive processes rather than replace them entirely.

## ***Conclusion***

In conclusion, this opinion piece has highlighted the potential of generative AI to facilitate collaborative learning experiences, emphasising the importance of cultivating a learning community that effectively harnesses the capabilities of AI in collaborative learning. While concerns about AI's impact on education are valid, a more thoughtful and deliberate approach that considers AI's potential benefits and risks in education may be more effective. Instead of a punitive and top-down regulatory approach, which risks running the usage underground, the focus should be on cultivating authentic learning experiences and imparting ethical guidance for AI utilisation. HEIs can foster transparency by clearly communicating and providing training on the use of generative AI in teaching and learning. This opinion piece calls for a more informed approach to incorporating generative AI into teaching and learning practices, examining how key features might apply to enhancing students' skills and knowledge while ensuring its ethical, reliable, and effective use.



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